TITLE

IMAGE PROCESSING TO PREVENT FORGERY

5 <u>BACKGROUND OF THE INVENTION</u>

<u>Field of the Invention</u>

The present invention relates to forgery prevention. More

10 particularly, the present invention controls output of image data based on whether

or not the image data is received from an image reading device that includes a

forgery preventing function.

<u>Description of the Related Art</u>

15 Recently, the performance of color image readers that use CCD's

or the like (for example, color scanners) and color printers has increased. As a

result, the probability of making forgeries has increased by permitting the reading

of copy-inhibited objects, such as bank notes and securities, with color scanners to

generate image data, and outputting the image data to color printers to create a

20 forged document.

However, when a personal computer (hereinafter, a PC) is used in

connection with a color scanner and a color printer, a forgery-preventing device is

more difficult to implement. In this regard, it is possible to implement a forgery-preventing device for all new scanners and printers. But, to do so for relatively inexpensive scanners and printers would significantly increase the price. Furthermore, if all new scanners and printers implement the forgery-preventing

5   device, scanners or printers have already been sold do not have the forgery-preventing device. It is impossible to prevent using the scanner or printers have already been sold. To prohibit using the scanners or printers have already been sold decreases productivity.

Further, in a system in which color scanners and printers are

10   connected via a network, it is difficult to offer a forgery-preventing function certainly and to know whether a scanned image or a printed image are performed with a forgery-preventing process or not.

SUMMARY OF THE INVENTION

15   The present invention addresses the foregoing by controlling the output of image data based on whether the image data is input from a device that includes a forgery-preventing function. According to the invention, forgery-preventing capability data is received from each of a plurality of image reading devices and image output devices. Image data read by one of the image reading

20   devices is received and based on whether or not the image reading device includes a forgery-preventing capability, the image data is output to an appropriate image output device.

As a result, if image data includes security marks(such as electronic watermarks, etc.) and is read by a reading device that does not include a

forgery-preventing capability, an output device which includes a forgery-preventing function is selected as the output device and printout of a forged document can be prevented. In contrast, if the image data includes security marks but is read by a reading device that includes a forgery-preventing capability, the

5 image data will be analyzed and only printed if certain criteria are met, thus preventing printing of a forged document.

Thus, in one aspect the invention may be an image processing apparatus that communicates with a plurality of image reading devices and a plurality of image output devices, comprising first receiving means that receives

10 forgery-preventing capability data from each of the plurality of image reading devices and a plurality of image output devices, second receiving means that receives image data read by one of the plurality of image reading devices, and controlling means that controls the image data to output the image data to an appropriate image output device based on whether or not the image reading device

15 which read the image data includes a forgery-preventing capability .

One particular object of the present invention is to provide both high productivity and effect of forgery-preventing at the same time .

According to one aspect, the present invention, which achieves these objectives, relates to an image processing apparatus comprising first

20 receiving means that receives information from a first scanning apparatus indicating the presence of a forgery-preventing function in the first scanning apparatus, and receiving information from a second scanning apparatus indicating the absence of a forgery-preventing function in the second scanning apparatus,second receiving means that receives information from a first printing

apparatus indicating the presence of a forgery-preventing function in the first

printing apparatus, and receiving information from a second printing apparatus

indicating the absence of a forgery-preventing function in the second printing

apparatus and controlling means that controls processing of image data received

5   from one of the first or second scanning apparatuses to send the received image

data to one of the first or second printing apparatuses based on the information

received by the first receiving means and the information received by the second

receiving means.

          According to another aspect, the present invention, which

10   achieves these objectives, relates to an image processing apparatus, comprising an

interface unit arranged to receive information from a first scanning apparatus

indicating the presence of a forgery-preventing function in the first scanning

apparatus, to receive information from a second scanning apparatus indicating the

absence of a forgery-preventing function in the second scanning apparatus, to

15   receive information from a first printing apparatus indicating the presence of a

forgery-preventing function in the first printing apparatus, and to receive

information from a second printing apparatus indicating the absence of a

forgery-preventing function in the second printing apparatus and a processor unit

arranged to control processing of image data received from one of the first and

20   second scanning apparatuses to send the received image data to one of the first or

second printing apparatuses, based on the information received by the interface

unit.

It is an important advantage of the present invention that the present invention can offer to both high productivity and effect of forgery-preventing at the same time.

According to another aspect, the present invention, which achieves

5 these objectives, relates to an image processing apparatus, comprising first receiving means that receives information from a first scanning apparatus indicating the presence of a forgery-preventing function in the first scanning apparatus, and receiving information from a second scanning apparatus indicating the absence of a forgery-preventing function in the scanning apparatus,second

10 receiving means that receives information from a first printing apparatus indicating the presence of a forgery-preventing function in the first printing apparatus, and receiving information from a second printing apparatus indicating the absence of a forgery-preventing function in the second printing apparatus, inputting means that inputs information related to a selected scanner apparatus for image scanning and

15 notifying means that notifies a user, based on the information received by the first receiving means, the information received by the second receiving means, and the information input by the input means, of at least one available printing apparatus for which image data can be sent to for printing.

According to another aspect, the present invention, which

20 achieves these objectives, relates to an image processing apparatus, comprising an interface unit arranged to receive information from a first scanning apparatus indicating the presence of a forgery-preventing function in the first scanning apparatus, to receive information from a second scanning apparatus indicating the absence of a forgery-preventing function in the second scanning apparatus, to

receive information from a first printing apparatus indicating the presence of a

forgery-preventing function in the first printing apparatus, and to receive

information from a second printing apparatus indicating the absence of a

forgery-preventing function in the second printing apparatus, a pointing unit

5   arranged to indicate information related to a selected scanner apparatus for image

scanning and, a display unit arranged to display, based on the information received

by the interface unit and the information indicated by the pointing unit, at least one

available printing apparatus for which image data can be sent to for printing.

It is an important advantage of the present invention that the present

10   invention can offer to both high productivity and effect of forgery-preventing at the

same time.

Other objects and advantages of the present invention will become

apparent from the detailed description to follow taken in conjunction with the

appended claims.

15   BRIEF DESCRIPTION OF THE DRAWINGS

Fig.1 is a diagram showing the configuration of an image

processing system comprise an image information processing apparatus, an image

reading apparatus and an image forming apparatus.

Fig.2 is a block diagram to explain scanner 101 in Fig.1.

20   Fig.3 is a block diagram of the image data controller 100.

Fig.4 is a block diagram of printer 102.

Fig.5 is a flowchart that shows an example of the first control

processing sequence of the image processing system.

Fig.6 shows an example of the device information map(table).

Fig.7 is a flowchart that shows an example of the second control processing sequence of the image processing system.

Fig.8 showing the warning displayed on display 311 of image controller 100 when a coincidence degree between the corrected image data and the specific image data in specific image memory 205 is higher than predetermined value.

Fig.9 is a flowchart that shows an example of the third control processing sequence of the image processing system.

Fig.10 is a drawing of showing the warning displayed on display 311 of image data controller 100 when a coincidence degree between the corrected image data and the specific image data in specific image memory 914 is higher than predetermined value.

Fig.11 is an example of a diagram of showing a selection display for scan-print job displayed on display 311 of image data controller 100.

Fig.12 is an example of a diagram of showing a selection display for scan-print job displayed on display 311 of image data controller 100.

Fig.13 is an example of a diagram of showing a selection display for scan-print job displayed on display 311 of image data controller 100.

Fig.14 is a flowchart that shows an example of the fourth control processing sequence of the image processing system.

<u>DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS</u>

First Embodiment

Fig.1 is a diagram showing the configuration of an image processing system which may comprise an image information processing

apparatus(such as a PC), an image reading apparatus(such as a scanner) and an image forming apparatus(such as a printer). Image data controller(PC) 100 is preferably a personal computer or a work station and performs input/output control of image data. Image scanners 101 and 103 read an original document and convert

5   the read image data to an image signal. Printers 102 and 104 print an image based on image signals received form Image data controller (PC)100. In Fig.1, scanner 101 and printer 102 include forgery-preventing devices and scanner 103 and printer 104 do not include forgery-preventing devices. In Fig.1, scanner 101 is directly connected to image data controller(PC) 100 and scanner 103 is connected

10   to image data controller(PC) 100 via scanner 101. Printer 102 is directly connected to image data controller 100 and printer 104 is connected to image data controller 100 via printer 102.

Fig.2 is a block diagram to explain an internal structure of scanner 101. CPU 201 controls scanner 101 based on a program stored in ROM 207 or

15   some other unshown medium. CPU 201 controls an image signal processing circuit or an unshown optical system and an unshown mechanical system for reading processing. RAM 208 is used for a working area of CPU 201. Charge coupled device image sensor(hereinafter CCD) 202 coverts light based on an original document to an image signal. Image correction processing circuit 203 includes a

20   shading correction processing circuit for compensating the dispersion of light distribution among a central part and end parts and a color space conversion processing circuit for converting a color signal having the color space characteristic of CCD 202 to color signals of a standard color space. Image comparing circuit 204 judges a coincidence degree between the corrected image

data and specific image data to be described below. Specific image memory 205 stores the specific image data (which is image data of an original, for example bills and valuable securities in which the prevention of forgery is desired) for the image judgment by comparing circuit 204. The specific image data can be any data so

5 long as the data is data for identifying a specific image. For example, if a specific image has a specific pattern, the specific image data is information of expressing the specific pattern, and if the specific image has a digital water mark, the specific image data is information of expressing the digital water mark. A digital water mark is a known technology of adding information to a specific frequency in an

10 image and is a suitable method for adding information so as not to be seen by the naked eye. Image network interface 206 transfers data to image data controller(PC) 100. The judging result of image comparing circuit 204 and the corrected image data are transferred by image network interface 206 to PC 100.

Scanner 103 has the same configuration as scanner 101 with the

15 exception of specific image memory 205 and image comparing circuit 204. That is, scanner 103 does not include a forgery capability and therefore omits memory 205 and comparing circuit 204.

Fig.3 is a block diagram of the image data controller(PC) 100. CPU 301 in the image data controller(PC) 100 performs the input/output control of data

20 with scanners 101 and 103 and printers 102 and 104. Data bus 302 is a data bus between CPU 301, card bus controller 304, ROM 305, RAM 306, hard disk controller 307, keyboard controller 313 and display controller 310, which are described later, and are all connected to data bus 302. Card bus controller 304 controls card bus 303 for inserting a function board for adding a function to image

data controller(PC) 100. ROM 305 is a program memory where control software for image data controller(PC) 100 is stored. RAM 306 is configured by DRAM (Dynamic RAM) or SRAM (Static RAM), is used as a work area for application programs and can also be used as image data memory. Hard disk controller 307

5   performs read/write control of hard disk drive 312. Hard disk drive 312 is used for storing image data and program software. Hard disk controller 307 may also compress data when needed for storing image data and may also expand the data when needed for reading image data.

Next, each functional board connected to card bus 303 will be

10   described. Network interface card 308 interfaces to a network that is unshown. This is configured such that a card corresponding to a physical interface to a network such as an Ethernet network and a token-ring network can be installed. Image data network interface card 309 is a network interface for transferring image data between image data controller (PC) 100 and scanners 101 and 103 and

15   printers 102 and 104 in Fig.1. It is preferable to configure image data network interface 309 with a high-speed bus such that a large volume of image data can be transferred, such as IEEE 1394 and USB (Universal Serial Bus). Display 311 is connected to a display controller 310 which controls image output to display 311. Keyboard 314 is connected to keyboard controller 313 that controls input from

20   devices like keyboard 314, a mouse(unshown) or a truck ball(unshown). In the image processing system, a user instructs the reading of an original document or a printing operation by using a device such as keyboard 314 and a mouse (unshown) on display 311.

Fig.4 is a block diagram of an internal architecture of printer 102. CPU 901 controls printer 102, such as mechanical control of printer 102 and reception of data. ROM 902 stores programs performed by CPU 901. RAM 903 is used for a work area of CPU 901 and CPU address and data bus 904 are lines for

5 transferring address data and image data. IEEE 1394 link controller 905 interfaces with image network 1001. IEEE 1394 link controller 905 is connected to IEEE 1394 physical interface. First-In-First-Out memory (hereinafter, FIFO) 908 temporarily stores image data transferred by isochronous transfer to printer 102 and attached judging result information. Video data controller 909 controls reading

10 of the image data from FIFO 908, synchronizing with the timing of an engine of printer 102. The attached judging information (judging information attached to the image data) separates from the image data and is sent to RAM 903. On the other hand, the image data (bitmap data) is sent to laser driver 910. Laser driver 910 is used for print processes and engine controller 911 performs mechanical control,

15 such as a motor of printer engine 912 and a paper supply control.

Image comparing circuit 913 judges a coincidence degree between the image data, input in the printer, and specific image data such as stored data in specific image memory 914. The specific image data is similar to that described above and can be any data so long as the data is data for identifying a specific

20 image like bills or valuable securities. For example, if the specific image has a specific pattern, the specific image data is information of expressing the specific pattern, and if the specific image has a digital water mark, the specific image data is information of expressing the digital water mark. Specific image memory 914 is a memory to store the specific image data for the judging.

Printer 104 has the same configuration as printer 102 with the exception of specific image memory 914 and image comparing circuit 913. That is, printer 104 does not include a forgery-preventing capability and therefore, memory 914 and comparing circuit 913 are omitted.

5   Scanners 101 and 103 and printers 102 and 104 are connected with image data controller(PC) 100 communicably via a network as shown in Figs 1,2,3 and 4. For example, the apparatuses can be communicably connected via an ordinary network like an Ethernet or via an interface such as USB, Centronics parallel interface or SCCI.

10   Next, the operation of an image processing system comprising image data controller(PC) 100, scanners 101 and 103 and printers 102 and 104 will be described with reference to Figs 5 to 10. At first, a process sequence of image controller(PC) 100 for confirming that scanners or printers connected to the network have forgery-preventing functions will be explained.

15   Fig.5 is a flowchart of process steps for a first control processing sequence of the image processing system seen in Fig.1. Briefly, Fig.5 shows a process performed by image controller(PC) 100 for confirming whether scanners or printers connected to the network have forgery-preventing functions. The process is performed by running programs in ROM 305, hard disk 312 or other 20   storage medium (unshown) under the control CPU 301 in Fig.3.

In step 1101, image data controller(PC) 100 collects information on devices (scanners 101 and 103 and printers 102 and 104) connected to the network via image network interface card 309 in step 1101. More particularly, image data controller 100 requests that each of the devices connected to the network transfer

information indicating whether each of the devices includes a forgery-preventing

function. In response to the request, the devices send information indicating

whether they have a forgery-preventing function to image network interface card

309 of image data controller(PC) 100. If the devices do not respond to the request

5   from image data controller 100 for predetermined time, they may be judged as not

having the forgery-preventing function.

In step 1102, image data controller(PC) 100 generates a device

information map(table) as seen in Fig.6 (described later) based on the information.

As will be described below, image data controller(PC) 100 controls the

10   communication of image data to printers on the network by referring to this table.

Image data controller 100 generates or rewrites the information map when image

data controller 100 is turned on, whenever at least one of the devices is changed,

whenever the devices receive a scanning or print indication from image controller

100 or when a new device is connected to the network. Image data controller 100

15   can therefore check whether each scanner and each printer connected to the

network has the forgery-preventing function in advance of performing an image

process.

Fig.6 shows an example of the device information map(table). The

device information map holds name information of each device and information

20   indicating whether each device has the forgery-preventing function or not. The

device information map is preferably stored in RAM 306 or hard disk 312 in Fig3.

Fig.7 is a flowchart of process steps for a second control processing

sequence of the image processing system of Fig.1. Briefly, Fig.7 shows a process

in which scanner 101, having the forgery-preventing function(image comparing

circuit 204 and specific image memory 205), scans an original image (document,

photo, etc.) and a printer prints an image based on the original being sent to the

printer via image data controller 100. Steps 401 to 406 are performed by running

programs in ROM 305 or other storage medium (unshown) under the control of

5   CPU 201 in Fig.2. Steps 401, 407 and 408 are performed by running programs in

ROM 207, hard disk 312 or other storage medium (unshown) under the control of

CPU 301 in Fig.3. Step 408 is performed by running programs in ROM 902 or

other storage medium (unshown) under the control of CPU 901 in Fig.4.

In more detail, an operator puts the original image on scanner 101

10   and inputs an image reading indication from image data controller(PC) 100. In step

401, image data controller(PC) 100 judges whether the operator inputs the image

reading indication from keyboard 314 or an unshown pointing device or not. If the

image reading indication is not input to image data controller 100, image data

controller 100 stands by. If the image reading indication is input, scanner 101 starts

15   to scan the original in step 402. In this case, since scanner 101 has the forgery-

preventing function (image comparing circuit 204 and specific image memory 205)

, image data controller 100 permits use of a printer which the operator indicates

without considering the existence of a forgery-preventing function in the printer

based on the device map. That is, since scanner 101 includes a forgery-prevention

20   function, forgery-detection is performed therein and image data controller(PC) 100

allows the user to send the image data to any printer of his choosing, regardless of

whether or not the printer has a forgery-preventing function of its own.

Predetermined image processing is then performed to the image

data scanned by CCD 202 of scanner 101 by image correction processing circuit

203 to obtain corrected image data. In step 403, image comparing circuit 204

compares the corrected image data with the specific image data stored in specific

image memory 205. In step 404, the forgery-preventing function of scanner 101

judges whether a coincidence degree between the corrected image data and the

5   specific image data is higher than a predetermined value or not. If the forgery-

preventing function judges that the coincidence degree is higher than the

predetermined value, in step 406 scanner 101 sends information to image data

controller(PC) 100 indicating that the original image is the same as the specific

image to image data controller 100. In step 407, image data controller(PC) 100

10   displays a warning as shown in Fig.8 on display 311 based on the information. On

the other hand, if the forgery-preventing function of scanner 101 judges that the

coincidence degree is not higher than the predetermined value, scanner 101 sends

the corrected image data to image data controller 100 in step 405. Alternatively,

scanner 101 may directly send the corrected image data to a printer after scanner

15   101 sends the result of judgment to image data controller(PC) 100 and in response,

receives a permission signal from image data controller(PC) 100 indicating that

scanner 101 is to directly send the corrected image data to the printer. As stated

above, since scanner 101 has the forgery-preventing function (image comparing

circuit 204 and specific image memory 205), image data controller 100 permits use

20   of a printer which the operator indicates without considering the existence of the

forgery-preventing function in the printer. The printer then prints an image based

on the corrected image data in step 408.

Fig. 8 shows an example of a warning displayed on display 311 of

image controller 100 when a coincidence degree between the corrected image data

and the specific image data in specific image memory 205 is higher than the predetermined value and as a result, the forgery-preventing function judges that the corrected image data is the same as the data of the specific image.

Fig. 9 shows a flowchart of process steps for scanner 103 which does not have the forgery-preventing function and is an example of a third control processing sequence of the image processing system of Fig.1. Briefly, Fig.9 shows a process where scanner 103, not having the forgery-preventing function(image comparing circuit 913 and specific image memory 914), scans an original image and a printer prints an image based on the original being sent to the printer via image data controller 100. Steps 601 to 607 are performed by running programs in ROM 207 or other storage medium (unshown) under the control of CPU 201 in Fig.2. Steps 601, 603 and 607 are performed by running programs in ROM 305, hard disk 312 or other storage medium (unshown) under the control of CPU 301 in Fig.3. Steps 604 to 606 are performed by running programs in ROM 902 or other storage medium (unshown) under the control of CPU 901 in Fig.4.

In Step 601, image data controller 100 judges whether the operator inputs an image reading indication from keyboard 314 or an unshown pointing device or not. If the image reading indication is not input to image data controller 100, image data controller 100 stands by. If the image reading indication is input, scanner 103 starts to scan the original image in step 602 and sends image data based on the original image to image data controller 100. Since scanner 103 does not have the forgery-preventing function, image data controller 100 recognizes the need to select a printer or printers which have the forgery-preventing function for judging the image data. Printer 102 is selected in this embodiment. In step 603,

image data controller 100 sends the image data received from scanner 103 to printer 102. The image data received via image data network 1001 is temporally stored in RAM 903 in printer 102. In step 604, image comparing circuit 913 compares the sent image data with specific image data stored in specific image

5   memory 914 to determined if the degree of coincidence is higher than a predetermined value. If the forgery-preventing function in printer 102 judges that the coincidence degree is not higher than the predetermined value, in step 605, flow proceeds to step 606 and printer 102 prints the sent image data. If the forgery-preventing function in printer 102 judges that the coincidence degree is higher than

10   the predetermined value, in step 605, the flow proceeds to step 606 and printer 102 sends information to image data controller(PC) 100 indicating that the original image is the same as the specific image data. In step 607, image data controller 100 displays a warning on display 311 as shown in Fig.10 based on the information. In an alternative arrangement, scanner 103 may directly send the corrected image data

15   to printer 102 on the basis of an indication from image data controller 100 as described above.

        Fig. 10 is an example of the warning displayed on display 311 of image data controller 100 when a coincidence degree between the corrected image data and the specific image data in specific image memory 914 is higher than the

20   predetermined value and the forgery-preventing function of printer 102 judges the corrected image data as being the same as the specific image.

        As can readily be seen by the foregoing, the image processing system does not stop printing and prints image data based on an original image by using a printer having the forgery-preventing function if a scanner scanning the

original image does not have the forgery-preventing function. As a result, the

image processing system can always consider a judging result of the forgery-

preventing and offers high productivity. In the image processing system

comprising a plurality of scanners(scanners 101, 103) and printers(printers 102,

5   104), when one of the scanners scans an original image and one of the printers

prints an image based on the original image(scan-print function), the image

processing system can offer both high productivity and effect forgery-prevention at

the same time by image data controller 100 controlling the selection of a printer for

printing the scanned image data based on the existence of the forgery-preventing

10   function in the scanner.

Second Embodiment

In the image processing system of Fig.1 in the first embodiment

comprising a plurality of scanners(scanners 101 and 103) and image

printers(printers 102 and 104), when one of the scanners scans an original image

15   and one of the printers prints an image based on the original image(scan-print

function), image data controller(PC) 100 controls selection of a printer for printing

the scanned image data based on the existence of the forgery-preventing function

in the scanner. In the second embodiment, image data controller(PC) 100 changes

a display condition for displaying scanners or printers on a display from which an

20   operator can select.

Fig. 11 is an example of a diagram showing a selection display for a

scan-print job displayed on display 311 of image data controller(PC) 100 and is an

initial condition before an operator designates any scanners and printers to perform

image processing. Image data controller(PC) 100 displays available device

information based on a confirmation of scanners and printers connected to a

network under the control of image data controller(PC) 100. An operator can select

a scanner and a printer for performing a scan-print job by selecting "scanner 101"or

"scanner 103" and "printer 102" or " printer 104" on display 311 from keyboard

5   314 in Fig.3 or an unshown pointing device. In the first embodiment, for

explaining operation of the image processing system easily, when the forgery-

preventing function of each device is confirmed, image data controller(PC) 100

receives information indicating whether each device(scanner and printer) has the

forgery-preventing function or not from the device. In practice however, the device

10   information map is made from specification information(resolution, color or

monochrome, bit length for each pixel, data format, job condition of each device

and job information held by each device) received together with the information

related to the forgery-preventing function. Image data controller(PC) 100 generates

or rewrites the information map when image data controller(PC) 100 is turned on,

15   when at least one of the devices is changed , when the devices receive a scanning

or print indication from image controller 100, or when a new device is connected

to the network. The specification information may be displayed on display 311. As

a result, an operator of this system can select a preferable scanner or printer

considering the specification information, and therefore, this system can offer both

20   high productivity and effect forgery-prevention at the same time. It should be noted

that although two scanners and two printers are described in this embodiment, the

specification information is more effective in a system where more scanners and

printers are connected to the network.

The following is an explanation of a situation where scanner 101 is selected on a scan-print job selecting display by an operator with reference to Fig. 12. In Fig.12, an example of a diagram showing the selection display for a scan-print job displayed on display 311 of image data controller(PC) 100 and where

5   scanner 101 is selected are shown. When scanner 101 is selected on the selection display for the scan-print job, a display condition for scanner 103 is changed on the display. In this situation, the operator can not select scanner 103 on this display. Since image data controller 100 has information that scanner 101 has the forgery-preventing function (image comparing circuit 204 and specific image memory

10   205), image data controller 100 displays both printer 102 and printer 104 for selection as a printer that the operator can select for image printing. The specification information can also be displayed on display 311. As a result, the operator can select the most preferable scanner or printer considering the specification information. In this embodiment, two scanners and two printers are

15   connected the network, but additional scanners and printers may be connected the network and the specification information is more effective when more scanners and printers are connected to the network.

Fig. 13 is an example of a diagram showing the selection display for a scan-print job displayed on display 311 of image data controller 100 and shows a

20   case where scanner 103 is selected. When scanner 103 is selected on the selection display for a scan-print job, a display condition for scanner 101 is changed on the display. In this situation, the operator can not select scanner 101 on the display. Since image data controller 100 has information that scanner 103 does not have the forgery-preventing function (image comparing circuit 204 and specific image

memory 205), image data controller 100 displays only printer 102 for selection as a

printer that the operator can select for image printing based on the specification

information.

       The following is on explanation of a controlling sequence of the

5   selection display for a scan-print job of the image processing system with

reference to a flowchart of Fig.14. Fig.14 is a flowchart that shows an example of a

fourth control processing sequence of the image processing system of Fig.1 and a

sequence of the selection display for a scan-print job. Steps 901 to 905 are

performed by running programs in ROM 305, hard disk 312 or other storage

10   medium (unshown) under the control of CPU 301 in Fig.3.

       At first, when the selection display for a scan-print job in Fig.11 is

displayed on display 311, in step 901 image data controller(PC) 100 judges

whether the operator has input an indication to select a scanner on display 311

from keyboard 314 or an unshown pointing device. If the indication is not input,

15   image data controller(PC) 100 stands by. If image data controller(PC) 100 judges

that the selecting indication is input, in step 902 image data controller(PC) 100

changes a display condition for all scanners except the selected scanner on the

display. In this situation, the operator can not select any scanners on this display

other than the selected scanner. In step 903, image data controller(PC) 100 judges

20   whether the selected scanner has the forgery-preventing function or not. If the

selected scanner has the forgery-preventing function, image data controller(PC)

100 display all printers that the operator can select from for printing image data

scanned by the selected scanner. On the other hand, if the selected scanner does not

have the forgery-preventing function in step 903, flow proceeds to step 905 and

image data controller 100 displays only those printers having the forgery-preventing function that the operator can select from for printing image data scanned by the selected scanner.

Since image data controller(PC) 100 changes the selection display

5   for a scan-print job based on the existence of the forgery-preventing function for scanners and printers under the control of image data controller(PC) 100 and displays the scanners and printers that can be used, the image processing system offers a certain forgery-preventing function. As a result, the image processing system in a scan-print operation can offer both high productivity and effect

10   forgery-prevention at the same time due to image data controller(PC) 100 is selection of a printer for printing a scanned image data based on the existence of the forgery-preventing function in the scanner.

The image processing system can perform forgery-prevention for image input from a color scanner and image output to a color printer. Particularly,

15   the image processing system, including an image information processing apparatus, image reading apparatus' and image printing apparatus' and perform a color copy function using image data sent via a network, can offer a forgery-prevention function. It should be noted that printers 102 and 104 preferably print an image by electrical photo method, ink-jet method, thermal transfer method or

20   dye sublimation method or any other print methods.

Furthermore, the processing described above can be implemented in a storage medium, storing program code of the procedure for implementing functions of each embodiment described above, to a system or an apparatus, and by the system or a computer (or CPU, or MPU) of an apparatus reading and executing

the program code stored in the storage medium. In this case, the program code

itself read from the storage medium implements the functions of each embodiment

described above, and the storage medium storing the program code constitutes the

present invention.

5   It is also possible to use ROM, a floppy disk, a hard disk, an

optical disk, a magnet-optical disk, CD-ROM, CD-R, a magnetic tape, a

nonvolatile memory card, or the like as a storage medium for storing the program

code.

In addition, the present invention includes not only a case that the

10   functions of each embodiment described above are implemented by a computer

executing the program code that the computer reads, but also a case that the

functions of each embodiment are implemented by such processing that an

OS(operating system) or the like operating on the computer performs part of all of

the actual processing. Furthermore, the present invention also includes a case that,

15   after the program code read form a storage medium is written in memory provided

in a feature expansion board inserted into a computer, or a feature expansion unit

connected to the computer, a CPU or the like that is provided in the feature

expansion board or the feature expansion unit performs part or all of the actual

processing, and functions of each embodiment described above are implemented.

20   Furthermore, the image processing system may download the

programs used in the first and second embodiments from a database(unshown) by

using a communication program in the image processing system and may

implement the programs like the first and second embodiments.

The invention may be embodied in the other specific forms without departing from the spirit or essential characteristics thereof. The present embodiment is therefore to be considered in all respects as illustrative and not restrictive, the scope of the invention being indicated by the appended claims

5   rather than by the foregoing description and all changes which come within the meaning and range of equivalency of the claims are therefore intended to be embraced therein.